

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/CA 01/ 00723	International filing date (day/month/year) 24/05/2001	(Earliest) Priority Date (day/month/year) 24/05/2000
Applicant BOGDAN, John, W.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

- ☐ as suggested by the applicant.
- ☒ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.

3
☐ None of the figures.

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Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

. In particular this invention allows using size limited clock counters
r for measurements of unlimited time ranges by combining unlimited numbe
s of intermediate samples without accumulating samples granularity error

In addition to the measurements of the final time ranges, the
intermediate samples are available for purposes of digital signal
processing.

please start with: "A digital phase detector comprises a frame
measurement configuration for counting a first signal clock during
every frame of a second signal and for buffering the counted
value until it is read by a phase processing unit."

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 01/00723

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H03D13/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
IPC 7 H03D H03L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 757 868 A (GURNEY DAVID PAUL ET AL) 26 May 1998 (1998-05-26) abstract; figures 1,2 ---	1
A	EP 0 903 885 A (NIPPON ELECTRIC CO) 24 March 1999 (1999-03-24) figures 1-7 ---	4,6-8,11
A	EP 0 208 449 A (ADVANCED MICRO DEVICES INC) 14 January 1987 (1987-01-14) ---	
A	US 5 491 438 A (MIYAZAKI YUKIO ET AL) 13 February 1996 (1996-02-13) ---	
	--- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

* & * document member of the same patent family

Date of the actual completion of the international search

13 December 2001

Date of mailing of the international search report

27/12/2001

Name and mailing address of the ISA

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Authorized officer

Peeters, M

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 01/00723

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PATENT ABSTRACTS OF JAPAN vol. 013, no. 325 (E-792), 21 July 1989 (1989-07-21) & JP 01 091519 A (MATSUSHITA ELECTRIC IND CO LTD), 11 April 1989 (1989-04-11) abstract</p> <p>-----</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 01/00723

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5757868	A	26-05-1998	NONE	
EP 0903885	A	24-03-1999	JP 3019814 B2	13-03-2000
			JP 11098132 A	09-04-1999
			CN 1211853 A	24-03-1999
			EP 0903885 A2	24-03-1999
			TW 437154 B	28-05-2001
			US 6275547 B1	14-08-2001
EP 0208449	A	14-01-1987	US 4675612 A	23-06-1987
			AT 95959 T	15-10-1993
			DE 3689159 D1	18-11-1993
			DE 3689159 T2	21-04-1994
			EP 0208449 A2	14-01-1987
			JP 61296815 A	27-12-1986
US 5491438	A	13-02-1996	JP 2792759 B2	03-09-1998
			JP 4363914 A	16-12-1992
			JP 2570933 B2	16-01-1997
			JP 5029891 A	05-02-1993
			US 5534805 A	09-07-1996
			DE 4142825 A1	02-07-1992
			KR 9406792 B1	27-07-1994
JP 01091519	A	11-04-1989	NONE	

Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)
The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.

**Declaration of inventorship (Rules 4.17(iv) and 51bis.1(a)(iv))
for the purposes of the designation of the United States of America:**

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/..... (if furnishing declaration pursuant to Rule 26ter).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: .. US PROVISIONAL APPLICATION NO. 60/206,579
.. WITH FILING DATE 24 MAY 2000

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name: .. JOHN W. BOGDAN

Residence: .. CANADA

Mailing Address: .. 1210 MAJOR STREET
.. OTTAWA, ONTARIO K2C 2S2 CANADA

Citizenship: .. CANADIAN

Inventor's Signature: .. J. W. Bogdan Date: .. 23 MAY 2001
(if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent) (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

Name: ..

Residence: ..

Mailing Address: ..

Citizenship: ..

Inventor's Signature: .. Date: ..
(if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent) (of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

SUBSTITUTE SHEET

PATENT COOPERATION TREATY

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NOTIFICATION CONCERNING
DOCUMENT TRANSMITTED

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as designated Office

Date of mailing (day/month/year)

29 November 2001 (29.11.01)

International application No.

PCT/CA01/00723

International filing date (day/month/year)

24 May 2001 (24.05.01)

Applicant

BOGDAN, John, W.

The International Bureau transmits herewith the following documents and number thereof:

_____ copy(ies) of declaration(s) (Rule 47.1(a-ter))

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

M. OUCHOUKHI

Telephone No.: (41-22) 338.83.38

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
29 November 2001 (29.11.2001)

PCT

(10) International Publication Number
WO 01/91297 A3(51) International Patent Classification⁷: H03D 13/00

(21) International Application Number: PCT/CA01/00723

(22) International Filing Date: 24 May 2001 (24.05.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/206,579 24 May 2000 (24.05.2000) US

(71) Applicant and

(72) Inventor: BOGDAN, John, W. [CA/CA]; 1210 Major Str., Ottawa, Ontario K2C 2S2 (CA).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,

LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report

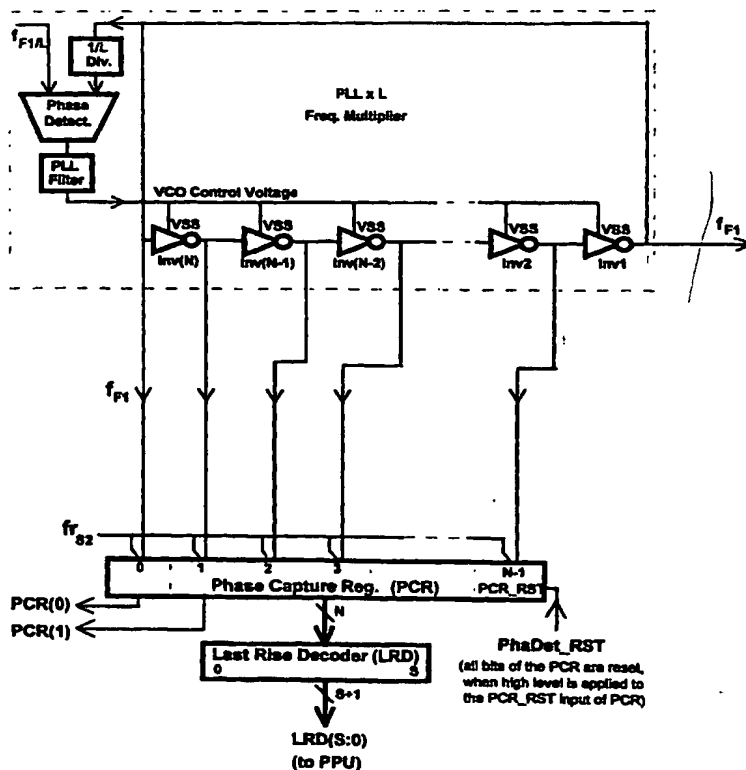
(88) Date of publication of the international search report:

14 March 2002

[Continued on next page]

(54) Title: HIGH RESOLUTION PHASE FREQUENCY DETECTORS

High Resolution Extension of the HRPD Config.2



(57) Abstract: A digital phase detector comprises a frame measurement configuration for counting a first signal clock during every frame of a second signal and for buffering the counted value until it is read by a phase processing unit. In particular this invention allows using size limited clock counters for measurements of unlimited time ranges by combining unlimited number of intermediate samples without accumulating samples granularity errors. In addition to the measurements of the final time ranges, the intermediate samples are available for purposes of digital signal processing.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

International Application No

CA 01/00723

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H03D13/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H03D H03L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, EPO-Internal

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L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

13 December 2001

Date of mailing of the international search report

27/12/2001

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Fax: (+31-70) 340-3016

Authorized officer


Peeters, M

INTERNATIONAL SEARCH REPORT

Int. Patent Application No.

PCT/JP 01/00723

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PATENT ABSTRACTS OF JAPAN vol. 013, no. 325 (E-792), 21 July 1989 (1989-07-21) & JP 01 091519 A (MATSUSHITA ELECTRIC IND CO LTD), 11 April 1989 (1989-04-11) abstract</p> <p>-----</p> 	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP98/01/00723

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EP 0903885	A	24-03-1999	JP 3019814 B2	13-03-2000
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			US 6275547 B1	14-08-2001
EP 0208449	A	14-01-1987	US 4675612 A	23-06-1987
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